WETLAND AND WATERWAYS REPORT

DANE COUNTY ELECTRIC RELIABILITY INITIATIVE
NORTH MADISON-HUISKAMP 138-KV TRANSMISSION PROJECT

AMERICAN TRANSMISSION COMPANY
2 Fen Oak Court
Madison, Wisconsin 53718

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GRAEF
ANHALT
SCHLOEMER
and Associates Inc.

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1 INTRODUCTION

This report prepared as part of the analysis of the North Madison-Huiskamp 138 kV Transmission Project. The report describes the approach to, and results of, natural resource studies along the preferred route and an alternate route to the west of it (Figure 1, Appendix A). Detailed information regarding this project can be found in the Application for Certificate of Public Convenience and Necessity, PSCW Docket No. 137-CE-139.

2 METHODS

2.1 BACKGROUND REVIEW

2.1.1 General Approach

Methods combining elements of the 1987 *Corps of Engineers Wetlands Delineation Manual* (Corps Manual) approach for off-site routine investigations and the Natural Resources Conservation Service (NRCS) approach for evaluating remote sensing data were used to determine the presence of water features and identify approximate boundary locations.[1]

2.1.2 Corps Manual

According to the Corps Manual, "When the routine approach is used, it may often be possible to make a wetland determination based on available vegetation, soils, and hydrology data for the area." Recommended data sources used for this investigation included US Geological Survey quadrangle maps, NRCS county soil survey maps, ATC's survey plans and engineering designs, Wisconsin Wetland Inventory (WWI) maps, and aerial photographs.

2.1.3 NRCS Remote Sensing

This procedure was used to correlate precipitation data with wet signatures (e.g. standing water, soil saturation, and stressed crops) appearing on aerial photographs taken over a number of years. GASAI first determined whether each photograph followed a period of normal, wetter then normal, or drier than normal weather. WETS Tables developed by the NRCS and precipitation data collected by the Spatial Climate Analysis Service, National Oceanic and Atmospheric Agency (NOAA) were used to compare the actual precipitation for the three months preceding the photography date with the normal range for that location. [2] Photographs taken between 1971 and 2000 were evaluated and three years of photography were used for detailed analysis: 1971 (25% below normal precipitation), 1995 (normal precipitation), and 2000 (16% above normal precipitation).

All collected data was incorporated into a Geographic Information System (GIS) in ArcMap. The GIS was then used to examine the correlation between topographic features, soil characteristics, known wetland locations, and persistent wet signatures on the aerial photographs. Areas having persistent wet signatures in association with topographic lows and either hydric soils or soil series with hydric inclusions were considered wetland. Other water features (rivers, streams, ditches, and ponds) were identified from the quadrangle maps and aerial photography.

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1 Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Woodward, D. (1997). "Hydrology tools for wetland determination." *Engineering* Chapter 19, Natural Resources Conservation Service, Washington, DC.

2 http://www.wcc.nrcs.usda.gov/water/w_clim.html, http://mistral.oce.orst.edu/www/mapserv/nn/, and http://www.crh.noaa.gov/mkx/climate.php/, respectively

Agricultural swales having no other characteristic suggestive of wetland conditions were excluded.

2.2 FIELD INVESTIGATION

2.2.1 Wetlands

Field verification of the off-site routine investigation results was completed between September 14 and 21, 2005. Methods outlined in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Corps Manual) for routine delineations were used to determine the presence of wetlands and to identify boundary locations.[1] Identified boundaries were marked with sequentially numbered blue wire flags. Observations of the presence or absence of wetland characteristics (hydrology, vegetation, and soils) were recorded at representative sample points within and adjacent to wetlands in the study area and these point locations were also marked with labeled blue flags. The study area included the full width of existing ATC transmission line corridors where the routes would be shared. Elsewhere, the study area was limited to existing public road easements (approximately 6 feet beyond the toe of the shoulder slope). Areas outside the study area were visually observed and these observations, in conjunction with aerial photography and soil maps were used to project the approximate wetland boundaries out beyond the limit of the physical investigation.

Species lists of the wetlands and adjacent uplands were compiled for each wetland. The *Wisconsin Floristic Quality Assessment* (WFQA) method was used to quantitatively determine the floristic quality of the plant communities described within and adjacent to wetlands in the study area.[2]

2.2.2 Waterbodies

The ordinary high water marks of ditches, streams, and ponds were determined using the indicators prescribed by the Wisconsin Department of Natural Resources (Table 1) and marked with sequentially numbered blue wire flags.[3]

Table 1. Indicators identified by the Wisconsin Department of Natural Resources as useful for making ordinary high water mark (ohwm) determinations

Biological Indicators:	
	Mosses
	Lichens
	Coarse brown lichen - usually lie above extreme high lake stages.
	Black - usually removed readily by water inundation.
	Orange Lichen - intermediate in their susceptibility to water destruction.
	Green Lichen - the lower most elevation of this lichen can indicate the highest watermark in recent years.
	Trees
	Water roots
	Pancake roots
	Pipe elbow roots

[1] Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

[2] Bernthal, Et Al. 2003. *Development Of A Floristic Quality Assessment Methodology For Wisconsin* Final Report To USEPA - Region V Wetland Grant # CD975115-01-0. WDNR: Madison, Wisconsin.

[3] Wisconsin DNR. *Waterway and Wetland Handbook, Chapter 40: Ordinary High Water Mark (OHWM).*

Table 1. Indicators identified by the Wisconsin Department of Natural Resources as useful for making ordinary high water mark (ohwm) determinations

	Pollen
	Large Cattail Mat
	Algae stain
Physical Indicators:	
	Ice Scars
	Erosion
	Mudstains and debris
	Water stains on rocks, culverts, seawalls, etc.
	Leachate marks in the soil
	Change in soil types

2.3 GENERAL ENVIRONMENTAL CHARACTERISTICS

During the wetland and waterbody investigation, GAS staff also noted general environmental characteristics along each of the two study corridors, noting the presence of different habitats, land uses, residences and other structures, and degree of corridor sharing.

3 RESULTS

3.1 BACKGROUND REVIEW

3.1.1 Soils

Review of data from the Dane County Soil Survey indicated the presence of 35 different soil series along the preferred route, and 39 soil series along the alternate route.[1] Along the preferred route, four of the series were hydric, seven had hydric inclusions, and twenty-four were non-hydric. Along the Alternate route, four of the series were hydric, eight had hydric inclusions, and twenty-seven were non-hydric. Soil map units along the preferred and alternate routes are shown on Figure 1 in Appendix A.

3.1.2 Wetlands

Wisconsin Wetland Inventory (WWI) data for the Study Area showed the presence of two emergent wetland polygons within 300 feet of the preferred route centerline and nine wetland polygons including emergent, shrub, and open water communities within 300 feet of the Alternate route. WWI mapping along the preferred and alternate routes is shown are shown on Figure 1 in Appendix A.

3.1.3 Climate

During the first half of September and preceding two months, approximately 7.2 inches of rain fell in the Study Area. This was approximately 26-percent less than the 30-year average of 9.71 inches recorded between 1972 and 2002 at the nearby Charmany Farm (WI 1416) weather station. As a result, conditions observed during the field portion of the investigation were inferred as being representative of drier than normal conditions.

3.2 WETLAND FIELD SURVEY

Based on the Corps Manual routine methodology, four wetlands were delineated within the Preferred Route corridor and seven wetlands were delineated along the Alternate Route corridor (data forms are in Appendix B). One additional wetland was observed along the Alternative Route corridor but was just outside the investigation limits and was not delineated.

All plant communities sampled had FQI values below 20 (Appendix C). According to the authors of the original methodology, an FQI value below 20 generally indicates a disturbed plant community with a low probability of being ecologically significant.[2]

The locations of delineated wetlands are shown on Figure 2 in Appendix A, and a table providing details for each identified wetland is located in Appendix D.

3.3 WATERBODY FIELD SURVEY

Based on our observations of hydrologic conditions and the biological and physical indicators listed in Table 1, GASAI identified three small streams along the preferred route and a pond, a creek, two streams, and a ditch along the Alternate route. The locations of identified water features are shown on Figure 2 in Appendix A, and a table providing details for each identified waterbody is located in Appendix D.

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1 Glocker, C.L. and R.A. Patzer. 1978. *Soil Survey of Dane County, Wisconsin.* US GPO: Milwaukee, WI.

2 Swink, F., and G. Wilhelm. 1994. *Plants of the Chicago Region*. 4th ed. Indianapolis: Indiana Academy of Science.

3.4 GENERAL ENVIRONMENTAL CHARACTERISTICS

Both the Preferred and Alternate routes are dominated by agricultural land uses and make full use of existing corridors such as roads, railroad grades, and transmission lines. However, the Preferred route runs through far fewer commercial industrial areas, runs adjacent to fewer residences, and crosses fewer wetlands than the Alternate Route. A full summary of general environmental characteristic data collected during the background review and field study is provided in the tables in Appendix E.

APPENDIX A

Figures

APPENDIX B

Wetland Delineation Data Forms

APPENDIX C

Plant Community Species Lists

APPENDIX D

Environmental Resource Table

APPENDIX E

Route Impact Tables